

Table A-16. Overall R&D in selected Asian countries and the United States: 1975–90
 Page 1 of 4

Country (unit of currency)	Year	R&D in millions of currency units				Overall R&D as a percentage of gross domestic product
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
India (rupee)	1975 . . .	3,568	9,034	976	1,702	0.5
	1976 . . .	3,741	9,043	1,013	1,704	.4
	1977 . . .	4,306	9,854	1,167	1,857	.5
	1978 . . .	5,286	11,782	1,495	2,220	.5
	1979 . . .	6,385	12,218	1,693	2,302	.6
	1980 . . .	7,605	13,052	1,922	2,460	.6
	1981 . . .	9,407	14,644	2,308	2,759	.6
	1982 . . .	12,061	17,475	2,905	3,293	.7
	1983 . . .	13,811	18,446	3,148	3,476	.7
	1984 . . .	17,816	22,137	3,803	4,172	.8
	1985 . . .	20,687	23,950	4,199	4,513	.8
	1986 . . .	24,354	26,439	4,752	4,982	.8
	1987 . . .	28,531	28,531	5,377	5,377	.9
	1988 . . .	33,473	30,927	6,096	5,828	.8
	1989 . . .	37,257	32,034	NA	6,037	.8
	1990 . . .	41,864	32,319	NA	6,090	.8
Japan (yen)	1975 . . .	2,737,000	3,834,828	9,789	18,296	1.8
	1976 . . .	3,054,400	3,992,396	10,770	19,048	1.8
	1977 . . .	3,358,920	4,124,347	11,882	19,677	1.8
	1978 . . .	3,725,080	4,392,906	13,463	20,959	1.8
	1979 . . .	4,217,280	4,827,237	16,164	23,031	1.9
	1980 . . .	4,826,320	5,319,981	19,305	25,382	2.0
	1981 . . .	5,502,794	5,880,095	23,238	28,054	2.1
	1982 . . .	6,014,874	6,307,523	26,591	30,093	2.2
	1983 . . .	6,621,186	6,893,383	29,839	32,888	2.4
	1984 . . .	7,302,421	7,510,003	33,329	35,830	2.5
	1985 . . .	8,274,717	8,382,288	38,185	39,992	2.6
	1986 . . .	8,562,752	8,529,074	39,661	40,692	2.6
	1987 . . .	9,162,095	9,162,095	43,712	43,712	2.7
	1988 . . .	9,931,859	9,873,379	48,781	47,106	2.7
	1989 . . .	11,075,422	10,840,002	55,433	51,718	2.9
	1990 . . .	12,281,229	11,725,622	62,787	55,943	2.9

See explanatory information and SOURCES at end of table.

Table A-16. Overall R&D in selected Asian countries and the United States: 1975–90

Page 2 of 4

Country (unit of currency)	Year	R&D in millions of currency units				Overall R&D as a percentage of gross domestic product
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Singapore (Singapore dollar)	1975 ...	NA	NA	NA	NA	NA
	1976 ...	NA	NA	NA	NA	NA
	1977 ...	38	51	23	28	0.2
	1978 ...	46	61	29	34	.3
	1979 ...	55	70	36	39	.3
	1980 ...	67	76	43	42	.3
	1981 ...	81	86	53	48	.3
	1982 ...	112	114	80	63	.3
	1983 ...	155	151	97	84	.4
	1984 ...	214	208	118	116	.5
	1985 ...	258	254	148	141	.7
	1986 ...	311	313	173	174	.8
	1987 ...	375	375	208	208	.9
	1988 ...	431	414	240	230	.9
	1989 ...	497	465	276	258	.9
	1990 ...	572	525	318	292	.9
South Korea (won)	1975 ...	NA	NA	NA	NA	NA
	1976 ...	60,900	195,357	242	378	0.4
	1977 ...	108,286	297,996	393	577	.6
	1978 ...	152,418	342,458	493	663	.6
	1979 ...	174,039	326,323	505	632	.6
	1980 ...	211,727	319,843	508	620	.6
	1981 ...	293,131	378,865	643	734	.6
	1982 ...	457,688	553,278	996	1,072	.8
	1983 ...	621,749	716,626	1,298	1,388	1.0
	1984 ...	833,894	924,139	1,694	1,790	1.1
	1985 ...	1,155,156	1,230,241	2,263	2,383	1.4
	1986 ...	1,523,279	1,578,105	2,955	3,057	1.6
	1987 ...	1,877,965	1,877,965	3,638	3,638	1.7
	1988 ...	2,347,415	2,216,309	4,533	4,294	1.8
	1989 ...	2,705,104	2,439,404	NA	4,726	1.9
	1990 ...	3,210,486	2,604,088	NA	5,045	1.9

See explanatory information and SOURCES at end of table.

Table A-16. Overall R&D in selected Asian countries and the United States: 1975–90

Page 3 of 4

Country (unit of currency)	Year	R&D in millions of currency units				Overall R&D as a percentage of gross domestic product
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Taiwan (New Taiwanese dollar)	1975 ...	NA	NA	NA	NA	NA
	1976 ...	NA	NA	NA	NA	NA
	1977 ...	NA	NA	NA	NA	NA
	1978 ...	6,407	10,339	242	388	0.6
	1979 ...	9,908	14,340	370	539	.8
	1980 ...	10,562	13,155	368	494	.7
	1981 ...	16,413	18,247	550	685	.9
	1982 ...	16,864	18,121	579	681	.9
	1983 ...	19,200	20,241	660	760	.9
	1984 ...	22,443	23,446	781	880	1.0
	1985 ...	25,397	26,373	896	990	1.0
	1986 ...	28,701	28,842	1,018	1,083	1.0
	1987 ...	36,779	36,779	1,381	1,381	1.1
	1988 ...	43,839	43,373	1,672	1,629	1.3
	1989 ...	54,789	52,556	NA	1,974	1.4
	1990 ...	71,548	65,938	NA	2,476	1.7
China (yuan)	1990 ...	12,695	10,458	NA	21,465	0.7

See explanatory information and SOURCES at end of table.

Table A-16. Overall R&D in selected Asian countries and the United States: 1975–90

Page 4 of 4

Year	United States		Total Asian countries	
	Constant 1987 dollars	Overall R&D as a percentage of gross domestic product	Constant 1987 \$PPPs ⁽¹⁾	Overall R&D as a percentage of gross domestic product
1975 . . .	72,256	2.2	19,998	0.7
1976 . . .	75,065	2.2	21,130	.7
1977 . . .	76,758	2.2	22,140	.7
1978 . . .	80,091	2.2	24,264	.7
1979 . . .	84,115	2.2	26,542	.8
1980 . . .	87,666	2.3	28,997	.8
1981 . . .	91,452	2.4	32,280	.8
1982 . . .	95,589	2.5	35,202	.9
1983 . .	102,310	2.6	38,597	1.0
1984 . . .	111,137	2.7	42,788	1.0
1985 . . .	120,624	2.8	48,020	1.1
1986 . . .	123,267	2.8	49,989	1.1
1987 . . .	125,353	2.8	54,316	1.1
1988 . . .	128,848	2.7	59,086	1.1
1989 . . .	129,888	2.7	64,712	1.1
1990 . . .	129,545	2.7	91,311	1.5

(1) \$PPPs = purchasing power parity dollars

KEY: NA = Not available

SOURCES: China: Government of the People's Republic of China, State Science and Technology Commission, Division of Statistics, Department of Planning; India: Government of India, Department of Science and Technology, 1991, *Pocket Data Book, 1991* (New Delhi), and Government of India, Department of Science and Technology, n.d., *Research and Development Statistics, 1990–91* (New Delhi); Japan: Organization for Economic Cooperation and Development, 1992, *Main Science and Technology Indicators* (Paris); Singapore: Government of Singapore, National Science and Technology Board, 1990, *National Survey of R&D Expenditures and Manpower*, and Government of Singapore, Science Council of Singapore, 1982–88, *National Survey of R&D Expenditures and Manpower*; South Korea: Government of the Republic of Korea, Ministry of Science and Technology, 1990, *1989 Report on the Survey of Research and Development in Science and Technology* (Seoul); Taiwan: Government of the Republic of China, National Science Council, 1989–90, *Indicators of Science and Technology*, annual series (Taipei); United States: National Science Foundation, 1992, *National Patterns of R&D Resources: 1992*, NSF 92-330 (Washington, DC)

**Table A-17. R&D in selected Asian countries and the United States,
by source of funds: 1975–90**

Page 1 of 8

Country (unit of currency)	Year	R&D in millions of currency units				Government percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Government						
India (rupee)	1975	2,882	7,297	788	1,375	80.8
	1976	2,939	7,104	796	1,339	78.6
	1977	3,349	7,664	908	1,444	77.8
	1978	3,975	8,860	1,124	1,670	75.2
	1979	4,730	9,050	1,254	1,705	74.1
	1980	5,534	9,498	1,399	1,790	72.8
	1981	6,861	10,680	1,683	2,013	72.9
	1982	8,866	12,845	2,136	2,421	73.5
	1983	10,116	13,511	2,306	2,546	73.2
	1984	13,772	17,113	2,940	3,225	77.3
Japan (yen)	1985	16,182	18,734	3,285	3,530	78.2
	1986	19,081	20,715	3,723	3,904	78.3
	1987	22,543	22,543	4,248	4,248	79.0
	1988	25,875	23,907	4,712	4,505	77.3
	1989	28,223	24,267	NA	4,573	75.8
	1990	32,161	24,828	NA	4,679	76.8

See explanatory information and SOURCES at end of table.

**Table A-17. R&D in selected Asian countries and the United States,
by source of funds: 1975–90**

Page 2 of 8

Country (unit of currency)	Year	R&D in millions of currency units				Government percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Government						
Singapore (Singapore dollar)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	11	15	7	8	24.1
	1979	16	20	10	11	28.7
	1980	23	26	15	14	34.3
	1981	33	35	22	19	40.9
	1982	47	48	34	27	42.3
	1983	68	66	43	37	43.7
	1984	97	94	53	52	45.2
South Korea (won)	1985	108	106	62	59	41.8
	1986	120	121	67	67	38.7
	1987	134	134	74	74	35.8
	1988	168	161	93	89	38.8
	1989	210	196	116	109	42.2
	1990	262	240	146	134	45.8
	1975	NA	NA	NA	NA	NA
	1976	39,181	125,686	156	244	64.3
	1977	51,256	141,053	186	273	47.3
	1978	73,722	165,641	239	321	48.4
United States	1979	91,322	171,229	265	332	52.5
	1980	105,459	159,310	253	309	49.8
	1981	121,726	157,328	267	305	41.5
	1982	187,898	227,141	409	440	41.1
	1983	169,554	195,428	354	379	27.3
	1984	171,595	190,165	349	368	20.6
	1985	222,936	237,427	437	460	19.3
	1986	289,444	299,862	561	581	19.0
	1987	382,011	382,011	740	740	20.3
	1988	415,825	392,601	803	761	17.7
	1989	461,750	416,396	NA	807	17.1
	1990	510,789	414,311	NA	803	15.9

See explanatory notes and SOURCES at end of table.

**Table A-17. R&D in selected Asian countries and the United States,
by source of funds: 1975–90**

Page 3 of 8

Country (unit of currency)	Year	R&D in millions of currency units				Government percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Government						
Taiwan (New Taiwanese dollar)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	NA	NA	NA	NA	NA
	1979	NA	NA	NA	NA	NA
	1980	4,133	5,148	144	193	39.1
	1981	6,014	6,686	202	251	36.6
	1982	7,261	7,802	249	293	43.1
	1983	8,456	8,915	291	335	44.0
	1984	10,632	11,107	370	417	47.4
China (yuan)	1985	11,566	12,011	408	451	45.5
	1986	12,092	12,151	429	456	42.1
	1987	13,256	13,256	498	498	36.0
	1988	19,523	19,315	745	725	44.5
	1989	19,601	18,802	NA	706	35.8
	1990	32,772	30,202	NA	1,134	45.8
	1990	7,617	6,275	NA	12,879	60.0

See explanatory information and SOURCES at end of table.

**Table A-17. R&D in selected Asian countries and the United States,
by source of funds: 1975–90**

Page 4 of 8

Year	United States		Total Asian countries	
	Constant 1987 dollars	Government percentage of total R&D	Constant 1987 \$PPPs ⁽¹⁾	Government percentage of total R&D
1975	38,060	51.4	6,805	34.0
1976	38,879	51.0	7,182	34.0
1977	38,992	50.5	7,532	34.0
1978	40,079	49.6	8,308	34.2
1979	41,435	48.8	8,821	34.2
1980	41,741	47.1	9,392	32.4
1981	42,964	46.5	9,573	29.7
1982	43,780	45.7	10,252	29.1
1983	46,923	45.8	10,499	27.2
1984	50,239	45.1	11,408	26.7
1985	55,260	45.8	12,139	25.2
1986	55,883	45.4	12,902	25.8
1987	57,904	46.2	14,128	26.0
1988	59,162	45.8	14,606	24.7
1989	57,864	44.5	14,883	23.0
1990	56,736	43.7	28,691	31.4

See explanatory information and SOURCES at end of table.

**Table A-17. R&D in selected Asian countries and the United States,
by source of funds: 1975–90**

Page 5 of 8

Country (unit of currency)	Year	R&D in millions of currency units				Industry percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Industry						
India (rupee)	1975	686	1,737	188	327	19.2
	1976	802	1,939	217	365	21.4
	1977	957	2,190	259	413	22.2
	1978	1,311	2,922	371	551	24.8
	1979	1,655	3,167	439	597	25.9
	1980	2,071	3,554	524	670	27.2
	1981	2,546	3,963	625	747	27.1
	1982	3,195	4,629	770	872	26.5
	1983	3,695	4,935	842	930	26.8
	1984	4,044	5,025	863	947	22.7
Japan (yen)	1985	4,505	5,216	914	983	21.8
	1986	5,273	5,724	1,029	1,079	21.7
	1987	5,988	5,988	1,128	1,128	21.0
	1988	7,490	6,920	1,364	1,304	22.4
	1989	8,909	7,660	NA	1,444	23.9
	1990	9,568	7,386	NA	1,392	22.9
	1975	1,715,604	2,403,744	6,136	11,468	62.7
	1976	1,924,345	2,515,305	6,785	12,001	63.0
	1977	2,138,892	2,626,300	7,566	12,530	63.7
	1978	2,330,556	2,748,374	8,423	13,112	62.6
United States	1979	2,697,945	3,088,156	10,341	14,734	64.0
	1980	3,194,604	3,521,364	12,778	16,800	66.2
	1981	3,725,392	3,980,825	15,732	18,992	67.7
	1982	4,162,293	4,364,806	18,401	20,824	69.2
	1983	4,681,179	4,873,622	21,096	23,252	70.7
	1984	5,279,650	5,429,732	24,097	25,905	72.3
	1985	6,123,291	6,202,893	28,257	29,594	74.0
	1986	6,310,748	6,285,927	29,230	29,990	73.7
	1987	6,734,140	6,734,140	32,129	32,129	73.5
	1988	7,488,622	7,444,528	36,781	35,518	75.4
United Kingdom	1989	8,539,150	8,357,642	42,738	39,874	77.1
	1990	9,567,077	9,134,260	48,911	43,579	77.9

See explanatory information and SOURCES at end of table.

**Table A-17. R&D in selected Asian countries and the United States,
by source of funds: 1975–90**

Page 6 of 8

Country (unit of currency)	Year	R&D in millions of currency units				Industry percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Industry						
Singapore (Singapore dollar)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	27	35	17	20	58.4
	1979	32	41	21	23	58.7
	1980	39	45	25	25	58.9
	1981	48	51	31	28	59.1
	1982	65	66	46	36	57.6
	1983	87	85	55	47	56.2
	1984	117	114	65	63	54.8
South Korea (won)	1985	149	147	86	81	57.8
	1986	190	191	105	106	61.0
	1987	241	241	134	134	64.3
	1988	262	251	146	140	60.7
	1989	285	267	158	148	57.4
	1990	310	285	172	158	54.2
	1975	NA	NA	NA	NA	NA
	1976	21,438	68,769	85	133	35.2
	1977	56,580	155,705	205	302	52.3
	1978	77,971	175,188	252	339	51.2
United States	1979	79,248	148,590	230	288	45.5
	1980	102,445	154,757	246	300	48.4
	1981	165,226	213,551	362	414	56.4
	1982	268,747	324,876	585	629	58.7
	1983	451,047	519,876	941	1,007	72.5
	1984	655,722	726,685	1,332	1,408	78.6
	1985	930,263	990,730	1,822	1,919	80.5
	1986	1,232,579	1,276,942	2,391	2,474	80.9
	1987	1,494,975	1,494,975	2,896	2,896	79.6
	1988	1,931,207	1,823,347	3,730	3,533	82.3
	1989	2,242,234	2,021,998	NA	3,917	82.9
	1990	2,699,697	2,189,777	NA	4,242	84.1

See explanatory information and SOURCES at end of table.

**Table A-17. R&D in selected Asian countries and the United States,
by source of funds: 1975–90**

Page 7 of 8

Country (unit of currency)	Year	R&D in millions of currency units				Industry percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Industry						
	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	NA	NA	NA	NA	NA
	1979	NA	NA	NA	NA	NA
Taiwan (New Taiwanese dollar)	1980	5,873	7,315	204	275	55.6
	1981	9,520	10,584	319	397	58.0
	1982	9,036	9,709	310	365	53.6
	1983	10,209	10,763	351	404	53.2
	1984	11,299	11,804	393	443	50.3
	1985	13,133	13,638	463	512	51.7
	1986	16,272	16,352	577	614	56.7
	1987	22,950	22,950	862	862	62.4
	1988	23,685	23,433	903	880	54.0
	1989	33,819	32,441	NA	1,218	61.7
	1990	36,990	34,090	NA	1,280	51.7
China (yuan)	1990	5,078	4,183	NA	8,586	40.0

See explanatory information and SOURCES at end of table.

**Table A-17. R&D in selected Asian countries and the United States,
by source of funds: 1975–90**

Page 8 of 8

Year	United States		Total Asian countries	
	Constant 1987 dollars	Industry percentage of total R&D	Constant 1987 \$PPPs ⁽¹⁾	Industry percentage of total R&D
1975	32,161	44.9	11,796	59.0
1976	33,851	45.3	12,499	59.2
1977	35,133	45.9	13,244	59.8
1978	37,237	46.6	14,022	57.8
1979	39,789	47.5	15,641	58.9
1980	43,107	49.4	18,069	62.3
1981	45,580	50.0	20,579	63.7
1982	48,582	50.9	22,727	64.6
1983	51,917	50.8	25,641	66.4
1984	57,336	51.6	28,767	67.2
1985	61,436	50.9	33,090	68.9
1986	62,996	51.1	34,263	68.5
1987	62,642	50.0	37,149	68.4
1988	64,654	50.2	41,374	70.0
1989	66,510	51.2	46,601	72.0
1990	66,890	51.7	59,238	66.9

⁽¹⁾ \$PPPs = Purchasing power parity dollars

NOTES: Chinese data include public enterprises; Taiwan data include public industry.

KEY: NA = Not available

SOURCES: China: Government of the People's Republic of China, State Science and Technology Commission, Division of Statistics, Department of Planning); India: Government of India, Department of Science and Technology, n.d., *Research and Development Statistics, 1990–91* (New Delhi); Japan: Organization for Economic Cooperation and Development, 1992, *Main Science and Technology Indicators* (Paris); Singapore: Government of Singapore, National Science and Technology Board, 1990, *National Survey of R&D Expenditures and Manpower*, and Government of Singapore, Science Council of Singapore, 1982–88, *National Survey of R&D Expenditures and Manpower*; South Korea: Government of the Republic of Korea, Ministry of Science and Technology, 1990, 1989 *Report on the Survey of Research and Development in Science and Technology* (Seoul); Taiwan: Government of the Republic of China, National Science Council, 1987, *Science and Technology Databook*, (Taipei); United States: National Science Foundation, 1992, *National Patterns of R&D Resources: 1992*, NSF 92-330 (Washington, DC)

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975–90**

Page 1 of 14

Country (unit of currency)	Year	R&D in millions of currency units				Government institutes percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Government institutes						
India (rupee)	1975	2,882	7,297	788	1,375	80.8
	1976	2,939	7,104	796	1,339	78.6
	1977	3,349	7,664	908	1,444	77.8
	1978	3,975	8,860	1,124	1,670	75.2
	1979	4,730	9,050	1,254	1,705	74.1
	1980	5,534	9,498	1,399	1,790	72.8
	1981	6,861	10,680	1,683	2,013	72.9
	1982	8,866	12,845	2,136	2,421	73.5
	1983	10,116	13,511	2,306	2,546	73.2
	1984	13,772	17,113	2,940	3,225	77.3
	1985	16,182	18,734	3,285	3,530	78.2
	1986	19,081	20,715	3,723	3,904	78.3
	1987	22,543	22,543	4,248	4,248	79.0
	1988	25,875	23,907	4,712	4,505	77.3
	1989	28,223	24,267	NA	4,573	75.8
	1990	32,161	24,828	NA	4,679	76.8
Japan (yen)	1975	364,005	510,010	1,302	2,433	13.3
	1976	402,537	526,155	1,420	2,510	13.2
	1977	440,690	541,114	1,559	2,581	13.1
	1978	502,956	593,125	1,818	2,830	13.5
	1979	565,787	647,618	2,169	3,089	13.4
	1980	618,377	681,628	2,473	3,252	12.8
	1981	661,397	706,746	2,793	3,372	12.0
	1982	673,082	705,830	2,975	3,367	11.2
	1983	691,358	719,780	3,116	3,434	10.4
	1984	725,685	746,314	3,312	3,560	9.9
	1985	810,759	821,299	3,742	3,918	9.8
	1986	840,223	836,918	3,892	3,993	9.8
	1987	943,178	943,178	4,499	4,499	10.3
	1988	935,256	929,749	4,592	4,435	9.4
	1989	953,755	933,482	4,773	4,453	8.6
	1990	976,867	932,673	4,994	4,449	8.0

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 2 of 14

Country (unit of currency)	Year	R&D in millions of currency units				Government institutes percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Government institutes						
Singapore (dollar)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	4	5	3	3	9.0
	1979	6	7	4	4	10.7
						12.9
	1980	9	10	5	5	
	1981	13	13	8	7	15.4
	1982	18	18	13	10	16.2
	1983	26	26	16	14	16.9
	1984	38	37	21	20	17.7
						16.5
	1985	43	42	24	23	
	1986	48	48	27	27	15.4
	1987	54	54	30	30	14.3
South Korea (won)	1988	74	71	41	40	17.3
	1989	103	96	57	54	20.7
	1990	143	131	79	73	25.0
Government institutes						
	1975	NA	NA	NA	NA	NA
	1976	20,457	65,623	81	127	33.6
	1977	25,753	70,871	94	137	23.8
	1978	35,444	79,637	115	154	23.3
	1979	47,552	89,160	138	173	27.3
	1980	47,653	71,986	114	139	22.5
	1981	42,309	54,683	93	106	14.4
	1982	55,031	66,524	120	129	12.0
	1983	50,554	58,268	106	113	8.1
	1984	49,430	54,779	100	106	5.9
	1985	48,845	52,020	96	101	4.2
	1986	59,550	61,693	116	120	3.9
	1987	68,863	68,863	133	133	3.7
	1988	90,586	85,527	175	166	3.9
	1989	104,279	94,037	NA	182	3.9
	1990	118,788	96,351	NA	187	3.7

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975–90**

Page 3 of 14

Country (unit of currency)	Year	R&D in millions of currency units				Government institutes percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Government institutes						
Taiwan (new Taiwanese dollar)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	NA	NA	NA	NA	NA
	1979	NA	NA	NA	NA	NA
	1980	1,405	1,750	49	66	13.3
	1981	1,934	2,150	65	81	11.8
	1982	3,667	3,940	126	148	21.7
	1983	3,119	3,288	107	123	16.2
	1984	3,309	3,457	115	130	14.7
	1985	3,181	3,303	112	124	12.5
	1986	3,236	3,252	115	122	11.3
	1987	3,749	3,749	141	141	10.2
	1988	7,530	7,450	287	280	17.2
	1989	4,591	4,404	NA	165	8.4
	1990	12,163	11,209	NA	421	17.0
China (yuan)	1990	5,979	4,926	NA	10,110	47.1

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975–90**

Page 4 of 14

Year	United States		Total Asian countries	
	Constant 1987 dollars	Government institutes percentage of total R&D	Constant 1987 \$PPPs ⁽¹⁾	Government institutes percentage of total R&D
1975	11,253	15.2	3,808	19.0
1976	11,263	14.8	3,976	18.8
1977	10,856	14.1	4,163	18.8
1978	11,432	14.1	4,656	19.2
1979	11,458	13.5	4,972	18.8
1980	10,813	12.2	2,252	18.1
1981	10,836	11.7	5,578	17.3
1982	10,941	11.4	6,075	17.2
1983	12,160	11.9	6,231	16.1
1984	12,737	11.4	7,042	16.4
1985	13,725	11.4	7,697	16.0
1986	13,936	11.3	8,164	16.3
1987	13,413	10.7	9,052	16.6
1988	13,781	10.7	9,426	15.9
1989	13,971	10.7	9,428	14.6
1990	14,203	10.9	19,919	21.8

See explanatory information and SOURCES at the end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 5 of 14

Country (unit of currency)	Year	R&D in millions of currency units				Industrial research percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Industrial research						
India (rupee)	1975	686	1,737	188	327	19.2
	1976	802	1,939	217	365	21.4
	1977	957	2,190	259	413	22.2
	1978	1,311	2,922	371	551	24.8
	1979	1,655	3,167	439	597	25.9
	1980	2,071	3,554	524	670	27.2
	1981	2,546	3,963	625	747	27.1
	1982	3,195	4,629	770	872	26.5
	1983	3,695	4,935	842	930	26.8
	1984	4,044	5,025	863	947	22.7
Japan (yen)	1985	4,505	5,216	914	983	21.8
	1986	5,273	5,724	1,029	1,079	21.7
	1987	5,988	5,988	1,128	1,128	21.0
	1988	7,490	6,920	1,364	1,304	22.4
	1989	8,909	7,660	NA	1,444	23.9
	1990	9,568	7,386	NA	1,392	22.9

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 6 of 14

Country (unit of currency)	Year	R&D in millions of currency units				Industrial research percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Industrial research						
Singapore (dollar)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	26	34	17	19	56.9
	1979	31	39	20	21	55.5
	1980	36	41	23	23	54.2
	1981	43	45	28	25	53.0
	1982	58	59	41	33	51.9
	1983	79	77	49	43	50.8
	1984	107	104	59	58	49.8
	1985	137	135	79	75	53.1
	1986	176	177	98	98	56.6
	1987	226	226	126	126	60.3
	1988	251	241	140	134	58.2
South Korea (won)	1989	279	261	155	145	56.2
	1990	310	285	172	158	54.2
Industrial research						
	1975	NA	NA	NA	NA	NA
	1976	15,141	48,570	60	94	24.9
	1977	41,714	114,794	151	222	38.5
	1978	53,802	120,884	174	234	35.3
	1979	59,294	111,176	172	215	34.1
	1980	81,351	122,892	195	238	38.4
	1981	120,654	155,942	265	302	41.2
	1982	205,654	248,606	447	482	44.9
	1983	375,810	433,158	784	839	60.4
	1984	538,295	596,550	1,094	1,156	64.6
	1985	751,025	799,842	1,471	1,550	65.0
	1986	1,021,653	1,058,425	1,982	2,051	67.1
	1987	1,224,377	1,224,377	2,372	2,372	65.2
	1988	1,633,264	1,542,044	3,154	2,988	69.6
	1989	1,998,225	1,801,956	NA	3,491	73.9
	1990	2,375,760	1,927,025	NA	3,733	74.0

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 7 of 14

Country (unit of currency)	Year	R&D in millions of currency units				Industrial research percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Industrial research						
Taiwan (new Taiwanese dollar)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	NA	NA	NA	NA	NA
	1979	NA	NA	NA	NA	NA
	1980	5,771	7,188	201	270	54.6
	1981	9,209	10,238	309	384	56.1
	1982	8,057	8,657	277	325	47.8
	1983	9,553	10,071	328	378	49.8
	1984	10,970	11,460	382	430	48.9
China (yuan)	1985	12,715	13,204	449	496	50.1
	1986	15,921	15,999	565	601	55.5
	1987	21,763	21,763	817	817	59.2
	1988	20,948	20,725	799	778	47.8
	1989	30,695	29,444	NA	1,106	56.0
	1990	37,491	34,551	NA	1,298	52.4
China (yuan)	1990	3,440	2,834	NA	5,817	27.1

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 8 of 14

Year	United States		Total Asian countries	
	Constant 1987 dollars	Industrial research percentage of total R&D	Constant 1987 \$PPPs ⁽¹⁾	Industrial research percentage of total R&D
1975	49,171	68.7	11,590	58.0
1976	51,649	69.2	12,197	57.7
1977	53,383	69.7	12,993	58.7
1978	55,240	69.2	13,694	56.6
1979	58,316	69.6	15,387	58.2
1980	62,062	71.1	17,726	61.2
1981	65,699	72.1	19,964	61.9
1982	70,021	73.3	21,920	62.3
1983	74,883	73.2	24,841	64.4
1984	82,153	74.0	27,794	65.0
1985	89,265	74.0	31,811	66.3
1986	90,614	73.5	32,913	65.8
1987	92,155	73.5	35,427	65.2
1988	94,260	73.2	39,444	66.8
1989	93,944	72.4	44,634	69.0
1990	92,446	71.4	54,611	59.8

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 9 of 14

Country (unit of currency)	Year	R&D in millions of currency units				University research percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
University research						
Japan (yen)	1975	545,869	764,820	1,952	3,649	19.9
	1976	606,851	793,213	2,140	3,784	19.9
	1977	657,993	807,936	2,328	3,854	19.6
	1978	748,198	882,334	2,704	4,209	20.1
	1979	817,913	936,210	3,135	4,466	19.4
	1980	871,048	960,143	3,484	4,580	18.0
	1981	966,083	1,032,323	4,079	4,925	17.5
	1982	1,026,596	1,076,544	4,538	5,136	17.1
	1983	1,090,050	1,134,862	4,913	5,414	16.5
	1984	1,132,677	1,164,875	5,169	5,557	15.5
Singapore (dollar)	1985	1,174,198	1,189,463	5,419	5,674	14.2
	1986	1,202,395	1,197,666	5,570	5,714	14.0
	1987	1,283,375	1,283,375	6,122	6,122	14.0
	1988	1,318,360	1,310,597	6,474	6,252	13.3
	1989	1,389,312	1,359,781	6,953	6,487	12.5
	1990	1,499,906	1,432,050	7,668	6,832	12.2
	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	8	11	5	6	17.9
United States	1979	12	15	8	8	21.3
	1980	17	19	11	11	25.3
	1981	24	26	16	14	30.0
	1982	35	35	25	19	30.8
	1983	49	48	31	27	31.6
	1984	70	68	38	38	32.5
	1985	77	76	44	42	29.9
	1986	86	86	48	48	27.6
	1987	95	95	53	53	25.5
	1988	103	99	57	55	23.9
United States	1989	111	104	NA	58	22.4
	1990	120	110	NA	61	21.0

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 10 of 14

Country (unit of currency)	Year	R&D in millions of currency units				University research percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
University research						
South Korea (won)	1975	NA	NA	NA	NA	NA
	1976	1,978	6,345	8	12	3.2
	1977	5,482	15,086	20	29	5.1
	1978	20,543	46,157	66	89	13.5
	1979	16,536	31,005	48	60	9.5
	1980	25,902	39,129	62	76	12.2
	1981	27,168	35,114	60	68	9.3
	1982	66,610	80,522	145	156	14.6
	1983	64,251	74,056	134	143	10.3
	1984	87,052	96,473	177	187	10.4
	1985	118,802	126,524	233	245	10.3
	1986	164,286	170,199	319	330	10.8
	1987	198,067	198,067	384	384	10.5
Taiwan (new Taiwanese dollar)	1988	232,827	219,823	450	426	9.9
	1989	229,212	206,698	NA	400	8.5
	1990	243,994	197,911	NA	383	7.6
China (yuan)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	NA	NA	NA	NA	NA
	1979	NA	NA	NA	NA	NA
	1980	2,280	2,840	79	107	21.6
	1981	2,676	2,975	90	112	16.3
	1982	3,147	3,382	108	127	18.7
	1983	3,842	4,050	132	152	20.0
	1984	4,149	4,334	144	163	18.5
	1985	4,282	4,447	151	167	16.9
	1986	4,424	4,446	157	167	15.4
	1987	5,173	5,173	194	194	14.1
	1988	7,265	7,188	277	270	16.6
	1989	8,267	7,930	NA	298	15.1
	1990	9,444	8,704	NA	327	13.2

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 11 of 14

Year	United States		Total Asian countries	
	Constant 1987 dollars	University research percentage of total R&D	Constant 1987 \$PPPs ⁽¹⁾	University research percentage of total R&D
1975	10,392	12.5	3,649	18.2
1976	10,683	12.5	3,796	18.0
1977	10,889	12.7	3,884	17.5
1978	11,453	13.2	4,305	17.8
1979	11,743	13.3	4,535	17.1
1980	12,173	13.3	4,733	16.4
1981	12,595	13.0	5,119	15.9
1982	12,240	12.2	5,438	15.4
1983	12,822	11.9	5,736	14.8
1984	13,581	11.6	5,944	13.9
1985	14,729	11.6	6,129	12.8
1986	16,151	12.4	6,258	12.5
1987	17,321	13.1	6,753	12.4
1988	18,603	13.5	7,003	11.9
1989	19,129	14.0	7,243	11.8
1990	20,003	14.5	9,621	10.5

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 12 of 14

Country (unit of currency)	Year	R&D in millions of currency units				Nonprofit research institutes percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Nonprofit research institutes						
Japan (yen)	1975	142,279	199,348	509	951	5.2
	1976	126,850	165,805	447	791	5.3
	1977	113,094	138,866	400	662	4.5
	1978	100,830	118,907	364	567	4.9
	1979	94,601	108,283	363	517	4.0
	1980	145,541	160,428	582	765	4.0
	1981	245,520	262,354	1,037	1,252	4.5
	1982	276,178	289,615	1,221	1,382	4.6
	1983	279,649	291,145	1,260	1,389	4.2
	1984	307,422	316,161	1,403	1,508	4.2
South Korea (won)	1985	349,812	354,360	1,614	1,690	4.2
	1986	400,006	398,433	1,853	1,901	4.7
	1987	441,269	441,269	2,105	2,105	4.8
	1988	458,925	456,223	2,253	2,176	4.6
	1989	498,394	487,800	2,494	2,327	4.5
	1990	540,374	515,927	2,763	2,461	4.4
	1975	NA	NA	NA	NA	NA
	1976	23,322	74,813	93	145	38.3
	1977	35,334	97,237	128	188	32.6
	1978	42,626	95,774	138	186	28.0
United States	1979	50,655	94,978	147	184	29.1
	1980	56,818	85,831	136	166	26.8
	1981	103,000	133,125	226	258	35.1
	1982	131,045	158,414	285	307	28.6
	1983	130,002	149,840	271	290	20.9
	1984	154,620	171,353	314	332	18.5
	1985	231,401	246,442	453	477	20.0
	1986	273,689	283,540	531	549	18.0
	1987	386,658	386,658	749	749	20.6
	1988	390,738	368,915	755	715	16.6
	1989	373,360	336,688	NA	652	13.8
	1990	475,152	385,405	NA	747	14.8

See explanatory information and SOURCES at end of table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 13 of 14

Country (unit of currency)	Year	R&D in millions of currency units				Nonprofit research institutes percentage of total R&D
		Current year units	Constant 1987 units	Current \$PPPs ⁽¹⁾	Constant 1987 \$PPPs ⁽¹⁾	
Nonprofit research institutes						
Taiwan (new Taiwanese dollar)	1975	NA	NA	NA	NA	NA
	1976	NA	NA	NA	NA	NA
	1977	NA	NA	NA	NA	NA
	1978	NA	NA	NA	NA	NA
	1979	NA	NA	NA	NA	NA
	1980	1,106	1,378	38	52	10.5
	1981	2,594	2,884	87	108	15.8
	1982	1,992	2,140	68	80	11.8
	1983	2,685	2,831	92	106	14.0
	1984	4,016	4,196	140	158	17.9
China (yuan)	1985	5,219	5,420	184	204	20.5
	1986	5,121	5,146	182	193	17.8
	1987	6,094	6,094	229	229	16.6
	1988	8,037	7,952	307	299	18.3
	1989	11,236	10,778	NA	405	20.5
	1990	12,449	11,473	NA	431	17.4
	1990	2,082	1,745	NA	3,520	16.4

See explanatory information and SOURCES at end of the table.

**Table A-18. R&D in selected Asian countries and the United States,
by performer: 1975-90**

Page 14 of 14

Year	United States		Total Asian countries	
	Constant 1987 dollars	Nonprofit research institutes percentage of total R&D	Constant 1987 dollars	Nonprofit research institutes percentage of total R&D
1975	2,074	3.6	951	4.8
1976	2,239	3.5	936	4.4
1977	2,499	3.5	851	3.8
1978	2,882	3.5	753	3.1
1979	2,989	3.6	701	2.6
1980	3,182	3.4	983	3.4
1981	3,197	3.2	1,618	5.0
1982	2,967	3.0	1,769	5.0
1983	3,145	3.0	1,786	4.6
1984	3,467	3.0	1,998	4.7
1985	3,735	3.0	2,371	4.9
1986	4,011	2.8	2,643	5.3
1987	4,206	2.7	3,083	5.7
1988	4,372	2.7	3,190	5.4
1989	4,369	2.9	3,384	5.2
1990	4,288	3.2	7,159	7.8

⁽¹⁾ \$PPP = Purchasing power parity dollars

NOTES: India does not report university research or nonprofit research institutes. Singapore does not report nonprofit research institutes. Japanese data are adjusted for full-time equivalents.

KEY: NA = Not available

SOURCES: China: Government of the People's Republic of China, State Science and Technology Commission, Division of Statistics, Department of Planning; India: Government of India, Department of Science and Technology, n.d., *Research and Development Statistics, 1990-91* (New Delhi); Japan: Organization for Economic Cooperation and Development, 1992, *Main Science and Technology Indicators* (Paris); Singapore: Government of Singapore, National Science and Technology Board, 1990, *National Survey of R&D Expenditures and Manpower*, and Government of Singapore, Science Council of Singapore, 1982-88, *National Survey of R&D Expenditures and Manpower*; South Korea: Government of the Republic of Korea, Ministry of Science and Technology, 1990, 1989 *Report on the Survey of Research and Development in Science and Technology* (Seoul); Taiwan: Government of the Republic of China, National Science Council, 1987, *Science and Technology Databook*, (Taipei); United States: National Science Foundation, 1992, *National Patterns of R&D Resources: 1992*, NSF 92-330 (Washington, DC)